WHAT IS CLAIMED IS

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1. A method of classifying an image, comprising the steps of:

a) extracting a query image from a plurality of images in an image database;

10   b) searching, according to a predetermined similarity level, for a representative image resembling the query image in a representative image classification database in which groups of images are represented by respective representative images;

15   c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

20   d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

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2. The method as claimed in claim 1, wherein the images in the image database are obtainable by referring to the respective representative images in accordance with the predetermined similarity level.

3. The method as claimed in claim 1, further comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database;

b) searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

c) registering the further query image as a new further representative image in the further

representative image classification database when no
resembling further representative image is found as a
result of the search according to the further
predetermined similarity level; and

5   d) adding the further query image into a group
represented by the resembling further representative
image found as a result of the search according to the
further predetermined similarity level.

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        4.   The classification method as claimed in
claim 3, wherein the hierarchical structure is formed as
15   layers of a directory of a file system for managing the
images in the image database.

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        5.   An image feature space display method
comprising the steps of:
        a) determining k representative points (k
being an integer which is more than 1) in a feature
25   space in response to a distance between points in the

feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions.

6. The image feature space display method as claimed in claim 5, wherein the display space is two dimensional, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner, respectively,

wherein the representative points are disposed
proximally with respect to two feature spaces which are
arranged adjacent to each other and tangent to the sub-
feature spaces, and thus disposed distally with respect
5   to two other feature spaces which are arranged adjacent
to each other but not tangent to the sub-feature spaces.

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        7.   The image feature space display method as
claimed in claim 5, wherein the display space is three
dimensional, wherein the feature space and the display
space are divided into eight sub-feature spaces and
15   eight display regions in a grid manner, respectively,
wherein the representative points are disposed
proximally with respect to three feature spaces which
are arranged adjacent to each other and tangent to the
sub-feature spaces, and thus disposed distally with
20   respect to three other feature spaces which are arranged
adjacent to each other but not tangent to the sub-
feature spaces.

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8. The image feature space display method as claimed in claim 5, wherein the points in the feature space represent images in a representative image classification database which are subject to the steps of:

a) extracting a query image from a plurality of images in an image database;

b) searching, according to a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level.

9. The image feature space display method as claimed in claim 8, further comprising a step of forming the groups into a hierarchical structure, wherein the

5 forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database;

b) searching, according to a further

10 predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

15 c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as a result of the search according to the further

20 predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

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10. An image feature space display method
comprising the steps of:

a) dividing a feature space into three sub-
feature spaces, the three sub-feature spaces being
composed of two sub-feature spaces disposed within a
prescribed radius with respect to two reference points
in the feature space, and another sub-feature space
other than the two sub-feature spaces;

b) dividing a display space into sub-display
regions of three segments, the display space being
divided in a same manner as the feature space so that
the sub-feature spaces correspond to the sub-display
regions;

c) repeating the steps a) and b) until the
sub-feature spaces and the sub-display regions are
divided into minimum units, respectively; and

d) arranging each image included in a minimum
unit of a sub-feature space to a corresponding one of
the minimum units of the sub-display regions.

11. The image feature space display method as claimed in claim 10, wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces.

12. A program written to be executed with a computer, comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the

sub-feature spaces and the sub-display regions are
divided into minimum units, respectively; and

e) arranging each image included in a minimum
unit of a sub-feature space to a corresponding one of
5   the minimum units of the sub-display regions.

10   13.   The program written to be executed with a
computer as claimed in claim 12, wherein the display
space is two dimensional, wherein the feature space and
the display space are divided into four sub-feature
spaces and four sub-display regions in a grid manner,
15   respectively, wherein the representative points are
disposed proximally with respect to two feature spaces
which are arranged adjacent to each other and tangent to
the sub-feature spaces, and thus disposed distally with
respect to two other feature spaces which are arranged
20   adjacent to each other but not tangent to the sub-
feature spaces.

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14. The program written to be executed with a computer as claimed in claim 12, wherein the display space is three dimensional, wherein the feature space and the display space are divided into eight sub-feature

5 spaces and eight display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to three feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with

10 respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

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15. The program written to be executed with a computer as claimed in claim 12, wherein the points in the feature space represent images in a representative

20 image classification database which are subject to the steps of:

a) extracting a query image from a plurality of images in an image database;

b) searching, according to a predetermined

25 similarity level, for a representative image resembling

the query image in the representative image
classification database in which groups of images are
represented by respective representative images;

c) registering the query image as a new
5   representative image in the representative image
classification database when no resembling
representative image is found as a result of the search
according to the predetermined similarity level; and

d) adding the query image into a group
10 represented by the resembling representative image found
as a result of the search according to the predetermined
similarity level.

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16. The program written to be executed with a
computer as claimed in claim 15, further comprising a
step of forming the groups into a hierarchical structure,
20 wherein the forming step further includes the steps of:

a) extracting a further query image from the
representative images in the representative image
classification database;

b) searching, according to a further
25 predetermined similarity level, for a further

representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images;

5   c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as a result of the search according to the further

10   predetermined similarity level; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level.

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17. A program written to be executed with a

20   computer, comprising the steps of:

a) dividing a feature space into three sub-feature spaces, the three sub-feature spaces being composed of two sub-feature spaces disposed within a prescribed radius with respect to two reference points

25   in the feature space, and another sub-feature space

other than the two sub-feature spaces;

b) dividing a display space into sub-display regions of three segments, the display space being divided in a same manner as the feature space so that the sub-feature spaces correspond to the sub-display regions;

c) repeating the steps a) and b) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

d) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions.

18. The program written to be executed with a computer as claimed in claim 17, wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces.

19.   A recording medium having a program written thereto for processing with a computer, the recording medium comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively; and

e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions.

20. The recording medium having a program written thereto for processing with a computer as claimed in claim 19, wherein the display space is two

5   dimensional, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner, respectively, wherein the representative points are disposed proximally with respect to two feature spaces which are

10   arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to two other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces.

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21. The recording medium having a program written thereto for processing with a computer as

20   claimed in claim 19, wherein the display space is three dimensional, wherein the feature space and the display space are divided into eight sub-feature spaces and eight display regions in a grid manner, respectively, wherein the representative points are disposed

25   proximally with respect to three feature spaces which

are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-

5   feature spaces.

10   22.   The recording medium having a program written thereto for processing with a computer as claimed in claim 19, wherein the points in the feature space represent images in a representative image classification database which are subject to the steps

15   of:

          a) extracting a query image from a plurality of images in an image database;

          b) searching, according a predetermined similarity level, for a representative image resembling

20   the query image in the representative image classification database in which groups of images are represented by respective representative images;

          c) registering the query image as a new representative image in the representative image

25   classification database when no resembling

representative image is found as a result of the search
according to the predetermined similarity level; and

     d) adding the query image into a group
represented by the resembling representative image found

5   as a result of the search according to the predetermined
similarity level.

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     23.   The recording medium having a program
written thereto for processing with a computer as
claimed in claim 22, further comprising a step of
forming the groups into a hierarchical structure,

15   wherein the forming step further includes the steps of:
     a) extracting a further query image from the
representative images in the representative image
classification database;

     b) searching, according to a further
20   predetermined similarity level, for a further
representative image resembling the further query image
in a further representative image classification
database in which groups of images are represented by
respective further representative images;

25   c) registering the further query image as a

new further representative image in the further

representative image classification database when no

resembling further representative image is found as a

result of the search according to the further

5   predetermined similarity level; and

        d) adding the further query image into a group

represented by the resembling further representative

image found as a result of the search according to the

further predetermined similarity level.

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        24. A recording medium having a program

15   written thereto for processing with a computer, the

recording medium comprising the steps of:

        a) dividing a feature space into three sub-

feature spaces, the three sub-feature spaces being

composed of two sub-feature spaces disposed within a

20   prescribed radius with respect to two reference points

in the feature space, and another sub-feature space

other than the two sub-feature spaces;

        b) dividing a display space into sub-display

regions of three segments, the display space being

25   divided in a same manner as the feature space so that

the sub-feature spaces correspond to the sub-display
regions;

      c) repeating the steps a) and b) until the
sub-feature spaces and the sub-display regions are
5   divided into minimum units, respectively; and

      d) arranging each image included in a minimum
unit of a sub-feature space to a corresponding one of
the minimum units of the sub-display regions.

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      25. The recording medium having a program
written thereto for processing with a computer as
15   claimed in claim 24, wherein the reference points are
selected from points disposed nearest to representative
points included in the two sub-feature spaces.